

ABSTRACT

The invention provides a compact laser light source whose wavelength can be designed freely in a wavelength band in which the semiconductor laser has not been put to practical use by combining an efficient nonlinear optical crystal and high-power semiconductor lasers for optical communication. In one embodiment, the laser light source includes: a first laser for generating a laser beam of a wavelength λ_1 ; a second laser for generating a laser beam of a wavelength λ_2 ; and a nonlinear optical crystal that allows the laser beam of wavelength λ_1 and the laser beam of wavelength λ_2 as inputs and outputs a coherent beam having a wavelength λ_3 of a sum frequency that satisfies a relationship of $1/\lambda_1 + 1/\lambda_2 = 1/\lambda_3$. The wavelength λ_3 of the sum frequency is 589.3 ± 2 nm that is equivalent to the sodium D line.